Patients treated in this way frequently require revision of the mobile areas of the face. But the revisions are minor procedures and well tolerated by the patient and family. The large facial blocks, such as forehead and cheeks, do not require late reconstruction.

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Breast Implants and Cancer Detection

THE MODERN SILICONE BREAST IMPLANT was first introduced in 1963, and since then well over 2 million women in the United States (1 in 33 between the ages of 20 and 60) have had their breasts enlarged or reconstructed using this device. Uncounted more have received silicone injections for the same purpose—a procedure that has fortunately fallen into disrepute. As the median age for implantation is 32, a substantial number of women are approaching, or are well into, the cancer risk age group, thus representing a significant public health issue.

Self-detection and physical examination do not seem to be influenced by the presence of an implant. Because the silicone is radiopaque, however, mammography reliability can be diminished. Breast tissue can be hidden by the implant or compressed to a density that obscures subtle lesions.

New technology is now available by which the breast can be pulled or pinched in front of the implant, substantially improving the quality of the image and the amount of tissue viewed. This, combined with extra tangential views of obscured areas, can produce high-quality, diagnostically reliable mammograms. If a firm capsular contracture is present, this technique may not be as effective.

Are women who have had breast augmentation at risk for a delayed detection of cancer? Certainly they are theoretically at risk, and every woman should be so advised. Thus far, however, there have been no substantiated reports in the medical literature of any woman whose cancer detection was delayed because of an inability to recognize early tumors by mammography. In a study of 3,111 Los Angeles women, no delay in the detection of cancer, even with pre-"pinch" technology mammography, was found. Thus the risk, while real, would appear to be slight. The table compares these patients with all age-matched Los Angeles women without augmentation.

The American Society of Plastic Surgeons and the Society for Breast Imaging have recommended the following cancer screening program:

- *Examination.* Follow the American Cancer Society recommendations for monthly self-inspection. Annual physical examinations by physicians with experience in examining augmented breasts should be routine.
- *Mammography.* Preoperative mammograms should be obtained for women older than 35 years, every one to two years for women aged 40 to 50, and annually thereafter. High-volume screening clinics in which two quick views are taken should not be used. Mammography should be done in the same center each year by qualified mammographers who will make an effort to tailor the test to each woman. While these diagnostic studies are more expensive, the low-cost screens can be unreliable and therefore worthless.

TABLE 1.—*Breast Cancer Stage Distribution*

Cancer Type	All Patients in Los Angeles County, %	Implant Patients in Los Angeles County, %
In situ	7.1	12.5
Local	50.2	50.0
Nonlocal	42.7	37.5

Women who have had silicone injections become impossible to examine because the silicone often forms multiple granulomatous masses, and mammograms are unreadable. These women have given up forever the ability to detect carcinoma before it has spread beyond the breast. Subcutaneous mastectomy and reconstruction should be seriously considered in this population.

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Melanoma Update

MALIGNANT MELANOMA should no longer be considered rare. With sunlight exposure as a proven etiologic factor, its rate of increase is exceeded only by that of bronchogenic carcinoma. The median age continues to be younger than 50 years and, like other neoplastic disease, melanoma is curable if detected at an early stage.

The most effective treatment of the early stages of melanoma continues to be surgical extirpation. It plays a primary role in the management of patients with stage I disease (primary melanoma) and stage II disease (recurrence of tumor in the local regional area) and a limited role in the treatment of stage III (distant metastases). Thin (< 1 mm) lesions can be cured with narrow margins (1 cm), whereas thicker lesions require 2- to 5-cm margins to decrease the risk of local recurrence. Solitary metastases to the brain, subcutaneous areas, or even lymph nodes may be suited for extirpation with a reasonably good prognosis.

The role of lymph node dissection is controversial, although data suggest a prolonged survivorship in patients with intermediate-thickness (1.5 to 4 mm) melanoma who undergo such operations. Surgical extirpation is also important in the palliation of extranodal extension to prevent the breakdown of overlying skin and soft tissues. Radiation therapy continues to be mainly palliative, especially with bony metastases.

Dacarbazine (DTIC) has been the most extensively used chemotherapeutic agent. When used as a single agent, this mode of therapy can produce response rates of 15% to 20%, largely in controlling soft tissue disease. Complete remissions are few (less than 5%) in most series.

Biologic therapy with interferon has produced responses in as high as 22% of patients with disseminated malignant

melanoma. Interleukin 2 and lymphokine-activated killer cells have also been effective: Response rates with this combination have been 20% to 30%. Treatment recommendations, therefore, include wide surgical extirpation for thick melanomas, selective regional adenectomy, and systemic therapy in some patients.

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Lower Extremity Reconstruction

LOWER EXTREMITY RECONSTRUCTIVE GOALS following severe trauma include restoring limb function, covering vital structures, and maintaining a satisfactory appearance. Techniques available to meet these goals include fasciocutaneous flaps, muscle flaps, tissue expansion, and free tissue transfer. Several new procedures have been introduced that expand treatment alternatives and permit the successful management of lower extremity soft tissue and bone defects.

Deficits involving skin and subcutaneous tissue are amenable to treatment using skin grafts, pedicle flaps with or without a defined vascular supply, and fasciocutaneous flaps. The lateral supramalleolar flap has been described recently and offers stable soft tissue coverage of the lateral malleolus. Fasciocutaneous flaps have shown their usefulness in the soft tissue reconstruction of the distal lower leg. Finally, V-Y flaps of skin and fascia based on perforating vessels entering the flap from its deep surface have been used to cover metatarsal heads, the posterior heel, and the lateral malleolus. These V-Y flaps appear reliable and are versatile in design.

Muscle and musculocutaneous flaps continue to demonstrate their versatility. The biceps femoris musculocutaneous flap has been shown to have an extended application in lesions of the anterolateral thigh. The medial gastrocnemius muscle is being used with increasing frequency to cover a threatened or exposed knee prosthesis. In addition, muscle transferred into a fibrotic cavity has been shown to increase the antibiotic concentration in that area.

Tissue expansion in the lower leg offers promise for difficult scar reconstructions but has a higher complication rate than in other areas because of problems with skin instability and the constricting deep fascial layer. When appropriate precautions are taken, however, tissue expansion for lesions below the knee can be done successfully. This involves the use of a temporary silastic bag injected with an increasing volume of a saline solution.

A recent innovation has had an effect on orthopedic and plastic surgery. After a careful corticotomy is done, bone can be slowly separated using an external fixator, with the regeneration of new bone at the osteotomy site. This permits the lengthening of bone along with the correction of angulation and rotational deformities. This technique may prove useful in the treatment of the bony deficit in osteomyelitis. The area of bone infection could be excised and the proximal bone lengthened to bridge the deficit.

Free tissue transfer using microsurgical techniques continues to expand the lower extremity reconstructive horizons. The application of the insensate scapular free flap with its thin, well-vascularized skin paddle has recently been described for the treatment of foot wounds. If this skin is carefully tailored and the excess trimmed, it is possible to achieve foot reconstruction on the plantar surface. It is now known that the fibula transferred as a vascularized graft can be osteotomized and folded on itself to provide a strong reconstruction for the tibia. A recent series reinforces the concept that osteomyelitis can be successfully managed by bone debridement, free muscle transfer, and delayed bone grafting. Free tissue transfer techniques are being applied to patients with severe peripheral vascular disease in whom the only alternative is amputation.

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Facial Reanimation

RESTORING NORMAL facial movement after facial nerve damage is challenging. Spontaneous animation and the creation of a normal balanced smile can only be accomplished by reinnervating the paralyzed facial muscles with facial nerve fibers from the ipsilateral side. Therefore, in cases of distal seventh nerve injuries, interpositional nerve graft reconstruction is the most physiologic approach. If facial paralysis is due to intracranial injury, however, other more complicated forms of reconstruction are necessary.

Nerves from the ipsilateral side of the face can be transferred to the distal facial nerve to reinnervate the muscles. These include the hypoglossal, lingual, phrenic, greater auricular, spinal accessory, and the ansa-cervicalis. Portions of the temporalis, masseteric, and frontalis muscles can be transferred to mimic facial muscle movement. Muscle contractions after such techniques are not spontaneous, and a synthetic smile must be learned and practiced.

With the introduction of microvascular surgery, techniques have been devised to create more spontaneous facial muscle activity. A cross-facial nerve graft and a functional muscle transplantation are used in a two-stage operation to reanimate the face. During the first stage, a sural nerve graft is connected to distal branches of marginal mandibular, buccal, or zygomatic branches of the unparalyzed facial nerve. This nerve graft is tunneled subcutaneously below the lip. The free end of the nerve graft is left subcutaneous near the tragus on the paralyzed side.

Over the next six to eight months, the axons from the unparalyzed side grow across the sural nerve graft to the paralyzed side. The axonal growth can be followed by percussing over the nerve graft until an electrical shock sensation is elicited.

Once Tinel's sign is detected on the paralyzed portion of the face, the second-stage operation is done. A frozen-section biopsy of the free end of the cross-facial nerve graft is done to determine if axons have in fact grown from the unparalyzed side to the paralyzed side. If axons are present on frozen section, then the serratus anterior muscle is transplanted from the back to the face. The artery and vein to the